

**I claim:**

1. An apparatus for monitoring position, the apparatus comprising:

a cylinder having walls defining an interior and further having a length defined between a first end and a second end;

a wall at the first end;

a shaft having a length defined between a first end and a second end wherein a portion of the shaft is within the cylinder and wherein the shaft moves within the cylinder;

a head connected to the shaft;

an aperture within the wall at the first end wherein light projects through the aperture into the cylinder; and

a sensor within the cylinder wherein the sensor detects intensity of light within the cylinder wherein the intensity corresponds to a position of the shaft.

2. The apparatus of Claim 1 further comprising:

a second wall at the second end of the cylinder wherein the second wall encloses the cylinder.

3. The apparatus of Claim 1 further comprising:

a second shaft within the cylinder.

4. The apparatus of Claim 1 further comprising:

a fluid within the cylinder.

5. The apparatus of Claim 1 wherein the sensor is adjacent to the second end of the cylinder.

6. The apparatus of Claim 1 wherein the aperture is at a center of the wall.

7. The apparatus of Claim 1 further comprising:

a light source adjacent to the first end of the wall wherein the light source projects the light through the aperture.

8. The apparatus of Claim 1 further comprising:

a magnet adjacent to the cylinder wherein the magnet effects movement of the head.

9. A system for monitoring position, the system comprising:

a cylinder having walls defining an interior and having a shaft within the interior wherein the shaft extends through a wall of the cylinder and wherein the shaft is movable within the cylinder and further wherein the cylinder has an aperture in the wall adjacent to the shaft; and

a sensor within the cylinder wherein the sensor detects light within the cylinder and wherein an amount of light detected by the sensor corresponds to a position of the shaft within the cylinder.

10. The system of Claim 9 wherein the sensor is located within the cylinder on a wall opposite the aperture.

11. The system of Claim 9 further comprising:

a fluid within the system.

12. The system of Claim 9 further comprising:

a head attached to the shaft.

13. The system of Claim 9 further comprising:

a second shaft within the cylinder wherein the second shaft is movable within the cylinder.

14. The system of Claim 9 further comprising:  
a window within the aperture.
15. The system of Claim 9 further comprising:  
a light source adjacent to the aperture wherein the light source projects the light through the aperture.
16. The system of Claim 9 further comprising:  
a processor connected to the sensor.
17. The system of Claim 9 further comprising:  
a coating on the shaft wherein the coating absorbs light.
18. A method for measuring a position of a shaft within a cylinder having walls defining an interior wherein the cylinder has an aperture within one of the walls and further wherein the cylinder has a shaft within the interior wherein the shaft is movable, the method comprising the steps of:  
directing light into the cylinder through the aperture;  
detecting the light which enters the cylinder through the aperture; and  
relating an amount of light detected to the position of the shaft.
19. The method of Claim 18 further comprising the step of:  
moving the shaft within the cylinder.
20. The method of Claim 18 further comprising the step of:  
placing a fluid within the cylinder.